



February 26, 2001

Ms Karlene Fine
Executive Director
North Dakota Industrial Commission
600 East Boulevard Avenue
Bismarck, ND 58505

Subject: Transmittal Letter, North Dakota Lignite Research Program Proposal
**'LIGNITE VISION 21 PROJECT
AT GASCOYNE, NORTH DAKOTA'**

Dear Ms. Fine,

Enclosed please find hard 6 copies and an electronic PFD file of the proposal which Montana-Dakota Utilities Co. is submitting to the North Dakota Industrial Commission for consideration under the Lignite Research Program. This transmittal letter represents a binding commitment by Montana-Dakota Utilities Co. for the completion of the project as described in the proposal. Also enclosed is a check made out to the State of North Dakota as payment of the \$100 application fee.

Sincerely,

A handwritten signature in black ink that reads 'C. Wayne Fox'.

C. Wayne Fox
President

Enclosures

**LIGNITE VISION 21 PROJECT
GASCOYNE, NORTH DAKOTA
February 2001**

LIGNITE VISION 21 PROJECT GASCOYNE, NORTH DAKOTA

Total LRC Funds Requested \$10,000,000

Submitted to:

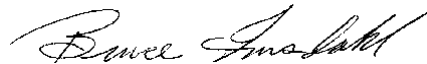
**Lignite Research Program
State of North Dakota
North Dakota Industrial Commission
600 East Boulevard Avenue
Bismarck, ND 58505**

Submitted by:

**Montana-Dakota Utilities Co.
400 N. 4th St.
Bismarck, ND 58501**



**C. Wayne Fox, President
Montana-Dakota Utilities Co.
Applicant & Project Manager**



**Bruce Imsdahl, V. P., Energy Supply
Montana-Dakota Utilities Co.
Principal Investigator**

February 26, 2001

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LIGNITE VISION 21 PROJECT GASCOYNE, NORTH DAKOTA

ABSTRACT

Introduction:

Montana-Dakota Utilities Co. is proposing through this Vision 21 Project application for grant funding to support a feasibility study, permitting, and successful construction of a 500 MW base load, lignite fired electric generating station to be built in the Gascoyne area of North Dakota.

Objectives:

The Lignite Vision 21 goal of “revitalizing growth in the lignite industry to meet the energy demands of the 21st century” are consistent with the objectives of this project. The objectives as listed within the project details are to successfully demonstrate the feasibility of, permit, and thus construct a new, environmentally clean, lignite fired, base loaded electric generating station in the Gascoyne, North Dakota area, utilizing a pre-existing lignite mine.

Expected Results:

Successful completion of this project will result in the construction and operation of a lignite fired power plant in western North Dakota which would revitalize that area, add stability to many businesses and jobs throughout the balance of North Dakota, and increase state tax revenues both through job development as well as coal mining severance taxes. Montana-Dakota recognizes that this project benefits the southwest portion of the state which is currently suffering from a depressed farm and ranch economy, depressed oil and gas development, and the recent closure of a productive lignite mine.

Duration:

The total project schedule encompasses up to a maximum of eight years. Numerous milestones showing completion of phases are laid out in the enclosed project schedule. The feasibility and permitting phases could last up to six years, with the actual construction being as short as three years.

Total Project Cost:

The feasibility study and permitting included in phase 1 and 2 of the project are estimated to cost \$20,000,000. Phase III of the project, which includes construction of the generating station, associated transmission lines, and the North Dakota lignite mine is estimated to cost \$740,000,000. This application is to request that the North Dakota Industrial Commission’s participation be \$10,000,000, co-funding parts of both phases 1 and 2 of this project.

Participants:

Partnerships may be developed prior to the implementation phase (phase 3) of the project.

1.0 PROJECT SUMMARY

Montana-Dakota is proposing that a 500 MW, lignite fired, base loaded electric generating station be constructed near Gascoyne, North Dakota. This state of the art generating station, would consume approximately four million tons of North Dakota lignite annually. The project is proposed to include the utilization of the lignite coal combustion products in a manufacturing facility which is expected to be adjacent to the electric generating station. Montana-Dakota is proposing that this project be completed at the Gascoyne Mine that became inactive in 1995, and thus offer a re-start of economic development in this area.

The project as proposed would provide economic development in an area of North Dakota that has suffered substantially from the down turn in the farming and ranching economy, reduced oil and gas exploration activity, and the recent closure of a productive lignite mine. Diversification of employment through the mine, electric generating station, and ash utilization in this area of North Dakota would stabilize the local economy.

The project would be completed in three phases. Each phase has a number of tasks that must be successfully completed prior to starting the next phase. Tasks have a number of decision points for individual review of the project feasibility. It is critical in each of the tasks that, not only individually but in aggregate, the feasibility of the project be reviewed. There will be a common decision point when the required permitting is accomplished, and the electric power market analysis, transmission outlet study, lignite mine costing study, and initial plant design are completed.

PHASE 1. Feasibility and Permitting

Task I. Siting and Environmental Analysis A Siting Certificate award requires a determination by the Public Service Commission, based on data submitted by the applicant, that a new facility minimizes adverse human and environmental impacts. The determination by the Public Service Commission requires analysis of a number of environmental and socioeconomic factors. Montana-Dakota will evaluate exclusion or avoidance areas, impacts to agriculture, surface and groundwater, and plant and animal life, as well as impacts to surrounding communities and the state. Once the optimal plant design is identified by preliminary air quality modeling, information for a Prevention of Significant Deterioration application and air quality permit to construct will be accumulated. This information will include air monitoring data, best available control technology analysis, study of visibility impairment, and impacts of emissions on soils, vegetation and wildlife. Montana-Dakota will coordinate with the Department of Health to model the Prevention of Significant Deterioration and visibility impacts as part of the permitting process.

Task II. Electric Power Market Analysis A critical component in determining the feasibility of constructing a generating plant is identifying the existence of a market for the power. Montana-Dakota will be unable to utilize the full output of a 500 MW unit as proposed by Vision 21 for existing customers immediately upon plant start-up. Therefore, it will be necessary for Montana-Dakota to establish partnerships with existing North Dakota generators or markets external to the Montana-Dakota service territory to absorb the output of the facility. As part of the feasibility study for the generating unit, Montana-Dakota will

retain a consultant to perform a market analysis. The final report on the electric market analysis will be a decision point as to the feasibility of building the power plant.

Task III. Mine Plan and Costing Analysis In order to complete an economic assessment of the feasibility of siting an electric generation plant in the Gascoyne area the costs associated with a fuel supplier must be known. The economic impact of fuel cost will require an evaluation and assessment of the development of an adjacent surface coal mining operation. The Mine Plan and Costing Analysis will provide information which, in combination with both the permitting process progress and power block design cost, gives a realistic view as to the feasibility of the project.

Task IV Transmission Study The objective of the transmission study will be to determine a transmission plan for the delivery of the power from Gascoyne to the previously defined markets, including Montana-Dakota's customer base. The transmission study will meet the requirements of the Mid-Continent Area Power Pool's or any other applicable regional reliability council's design standards and will include steady-state and stability analysis. The final report on the transmission study will be a decision point as to the feasibility of building the power plant.

Task V Socioeconomic Impact Population growth resulting from lignite development as an energy source and the operation of a large power plant will create increased needs for both public and private services and facilities. A broad understanding of the public and private sector costs and benefits associated with the power station can greatly aid local planning. Montana-Dakota will provide a report identifying the existing socioeconomic environment and assessing the impact of a plant.

Task VI Phase I Generating Plant and Lignite Combustion Product Utilization Design. Phase 1 efforts include initial design of the power block and identification of a method for utilization of the coal combustion products generated by the lignite plant. Power block design will include a preliminary water balance, since this is a critical element in cooling tower choice. Design elements critical for air quality permitting also will be studied.

The proposed plant site is near a rail load out loop and has easy access to east-west shipping on Interstate 94 as well as north-south shipping on state Highway 85. Marketing of material derived from lignite combustion products will be facilitated by access to these transportation routes. The Phase 1 investigation will identify possible products such as wall board, building blocks, pre-formed walls, or epoxy solidified products.

Task VII. Project Management and Reporting Mr. Bruce Imsdahl, Vice President-Energy Supply will serve as the principal investigator and thus the main contact with the Lignite Research Council and the North Dakota Industrial Commission. The progress of the project will be reported to all participants on a semi-annual basis. Should significant progress be identified in any task, a special interim report will be provided.

PHASE 2. Transmission Siting, Generating Plant and Lignite Combustion Product Utilization Design

Task I. Transmission Siting and Permitting. Task 1 addresses the transmission siting and permitting to allow physical construction of the transmission facilities identified in the Phase 1 Transmission Planning Study. This will require conformance to the regulations of the states in which transmission facilities will be constructed. In North Dakota, the siting will be in accordance with the Public Service Commission rules and regulations. It is anticipated that siting also will be required in the states of South Dakota, Minnesota, and possibly Wisconsin. The success of the siting and permitting task will be a decision point as to the feasibility of the project.

Task II. Phase II Generating Plant and Lignite Combustion Product Utilization Design Phase 2 task II of the Generating Plant and Lignite Combustion Product Utilization Design will be an extension of phase 1, task VI. This task will further refine the lignite combustion product utilization methodology as well as further refine the design of the power block, including the complete assessment of water availability to finalize selection of cooling tower technology.

Task III. Project Management and Reporting As in phase 1, Mr. Bruce Imsdahl will serve as the principal investigator, thus serving as the main contact with the Lignite Research Council and the North Dakota Industrial Commission. The progress on the project will be reported to all participants on a semi-annual basis. Should significant progress be identified in any task, a special interim report will be provided.

PHASE 3. Implementation

Task I. Construction of Electric Generating Station, associated Transmission Line, and Lignite Mine. Montana-Dakota is proposing to construct a 500 MW, lignite fired, base loaded electric generating station at Gascoyne, North Dakota. The construction of this facility will require construction of a transmission outlet as identified in phase 2. The existing inactive lignite mine at Gascoyne would be re-opened to supply fuel to the generating station. It is anticipated that the design of the power block be a standard, proven technology, typical of current day power blocks. Ash produced by the facility will be fully utilized in a marketable product. Montana-Dakota is not asking for North Dakota Industrial Commission matching funds for phase 3 as described.

Task II. Project Management and Reporting – As in phases 1 and 2, Mr. Imsdahl, as principal investigator, will provide a final technical report. A progress on the project will be reported to the North Dakota Industrial Commission on an annual basis. Should significant progress be identified in any task, a special interim report will be provided. A final report will be written following the completion of the project. At the discretion of the project sponsors, the results of this project can also be disseminated to the academic community and the power industry through presentations at international meetings as well as manuscripts in industry journals.

2.0 PROJECT DESCRIPTION

The objective of this project is to successfully demonstrate the feasibility, permit and thus construct a 500 MW electric generating station at Gascoyne, North Dakota utilizing lignite as the

fuel. The proposed generating unit would be environmentally clean and provide for manufacturing goods from the lignite combustion product.

Montana-Dakota is proposing that the power block be built using existing combustion technologies that have been proven through years of use. The environmental components of the power block will be “state of the art”.

This application for co-funding does not include a request for matching funds for construction of the power block. This application also does not include a request for matching funds for initial air quality modeling. The application includes a request for matching funds to study the feasibility of the plant through analysis of the market for energy and capacity, for a transmission study leading to transmission siting and permitting, power block siting and environmental analysis, and initial electric plant design providing for utilization of the combustion products.

PHASE 1 of the proposal is titled **Feasibility and Permitting**. Within this phase, there are seven tasks.

Task I involves electric plant siting and environmental analysis. North Dakota Century Code Chapter 49-22 specifies that a Certificate of Site Compatibility be issued by the Public Service Commission for any new power generation facilities. Siting certificate award requires a determination by the Public Service Commission, based on data submitted by the applicant, that a new facility minimizes adverse human and environmental impacts. This determination requires analysis of a number of environmental and socioeconomic factors. As required by NDCC Chapter 49 and rules at North Dakota Administrative Code Article 69-06, Montana-Dakota will evaluate exclusion or avoidance areas, impacts to agriculture, surface and groundwater, plant and animal life, as well as impacts to surrounding communities and the state. This evaluation will be facilitated by information already developed for mining permit applications by the Knife River Corporation. Existing information will be augmented with pertinent additional data from the North Dakota State Game and Fish Department, agriculture and natural resources offices, U. S. Geological Survey and other agencies, as well as studies conducted by Montana-Dakota.

The socioeconomic analysis required by the Facility Siting Act is discussed in Section 6.

Siting certification also includes consideration of ancillary benefits of the proposed project. For instance, Montana-Dakota will consider lignite combustion product use for projects such as wall board manufacturing when evaluating plant design. Redevelopment of Gascoyne Lake as a potential water source for the plant will enhance that facility for recreational use, and may have significant benefit to local merchants supporting these uses.

Costs associated with the facility siting certificate are estimated to be between \$500,000 and \$750,000.

A crucial consideration in plant siting and design is the impact of the plant emissions and supporting development on Prevention of Significant Deterioration increment consumption, visibility and ambient air quality.

Regulations at NDAC Chapter 33-15-05 outline the requirements for Prevention of Significant Deterioration evaluation. Because this plant will be located near several Class 1 air quality areas in which no additional sulfur dioxide impacts are allowed, this is a crucial evaluation. Montana-

Dakota will conduct a preliminary investigation of the impact of the proposed plant on existing Class 1 areas. This analysis will not be part of this grant application. If necessary, various plant sizes, designs and configurations will be evaluated to identify a project that can be permitted, recognizing existing constraints.

North Dakota Air Pollution Control Rules at NDAC 33-15-14-02 (5) specify that a determination must be made that a new plant would not cause or contribute to a violation of any applicable ambient air quality standard. This finding would be made by the Department of Health, based on modeling using information provided in the air quality permit to construct application. The proposed location is isolated from other significant sources of criteria pollutants. No ambient air quality issues are expected to be identified from modeling.

Once the optimal plant design is identified by preliminary modeling, information for a Prevention of Significant Deterioration application and air quality permit to construct will be accumulated. This information will include air monitoring data, best available control technology analysis, study of visibility impairment, and impacts of emissions on soils, vegetation and wildlife.

Montana-Dakota will coordinate with the Department of Health to model the Prevention of Significant Deterioration and visibility impacts as part of the permitting process, as required by state regulation.

Costs associated with air quality permitting issues are estimated to be \$150,000 to \$200,000.

Lignite combustion product storage and disposal facilities may be necessary if local use of the materials is unfeasible. Identification of a location near the plant site for storage/disposal and pre-permitting and permitting will be accomplished, using the requirements of NDAC Article 33-20. Costs for siting and permitting are estimated to be \$100,000

Task II involves the electric power market analysis. A critical component in determining the feasibility of constructing a generating plant is the existence of a market for the power. Montana-Dakota will be unable to utilize the full output of the 500 MW unit proposed by Vision 21. Therefore, it will be necessary for Montana-Dakota to find partnerships with existing North Dakota generators or markets external to the Montana-Dakota service territory to absorb the output of the facility. As part of the feasibility study for the generating unit, Montana-Dakota will retain a consultant to perform a market analysis. The objective would be to determine the magnitude of the market for both capacity and energy as well as the market-clearing price associated with the power. The analysis will evaluate the probability of the market being viable in a forward looking market starting in the 2009 time period by evaluating the probability of new generation being built in response to the current capacity shortages in various markets in the United States.

This market analysis for export would not be confined just to North Dakota, South Dakota, and Minnesota, but will look at potential markets in the Chicago, St. Louis and Kansas City areas as well as in California and the Pacific Northwest, with the goal of maximizing lignite usage. With the recent energy crisis in California, emphasis would be given to determining the feasibility of marketing into California and what transmission will be required to accomplish the transfer of energy from Gascoyne to California. The market analysis will include contacting various utilities to

ascertain their needs and interest as well as researching various public domain documents such as Department of Energy reports, and North American Electric Reliability Council documents.

One of the basic issues that needs to be determined regarding the market is whether there is an external market for capacity only or whether both capacity and energy are needed over the next ten to fifteen years. As part of the market analysis, a determination will be made as to the need for capacity only, and if so, if a base load coal fired generating unit would be practical to meet that market need. The analysis also will determine whether energy is needed and what the clearing price of that energy would be if it were to be marketed from North Dakota coal-fired generation.

In this era of deregulation, long-term power purchase contracts are not desirable. Most power purchasers are opting to purchase power in the short-term market rather than committing to perceived higher cost long-term contracts. That strategy has been costly recently, especially in California. As part of the analysis of the market, Montana-Dakota will evaluate the risk associated with entering into short-term contracts. If the market is lucrative, short-term contracts to various markets may be as advantageous as long-term firm contracts. A concern that will be addressed during this market analysis phase will be the financing liabilities and risks if long-term power contracts were not guaranteed. Montana-Dakota and its consultant will visit with financial experts to determine the risks associated with short-term power contracts.

Task III involves the mining plan and cost analysis. The Gascoyne area contains abundant lignite coal reserves to be utilized as a fuel source for the proposed 500MW electric generating station envisioned in this project. Knife River Corporation currently controls coal leaseholds totaling nearly 130 million tons. Of the 130 million tons approximately 40 million tons are within a permitted area for surface mining. The remaining 90 million tons are located on parcels adjacent to and surrounding the permitted reserves. It is anticipated that the 500MW plant will have fuel requirements in the range of 3.6 to 3.8 million tons annually. Expected life of the plant is fifty years. This will require a mineable lignite reserve of nearly 200 million tons. Giving consideration to historical recovery factors by surface mining methods, it is necessary to anticipate in-place coal reserves of approximately 235 million tons.

Appendix F, Exhibit A shows currently permitted reserves, the tentative plant site, Gascoyne Lake and the nearby communities of Scranton, Reeder and Gascoyne.

In order to ensure coal availability within a reasonable distance from the anticipated electric power generating station, a coal reserve assessment must be completed. The coal reserve assessment will consist of the following :

- Ownership and Control review and assessment relative to those persons or entities that own or control the surface, coal and other minerals in and around the plant site. Approximately 6,000 acres of reserves similar to that existing at the Gascoyne mine area would be necessary.
- Right-of-Entry acquisitions will be needed to allow drilling and inventory assessment of the coal reserve area. These documents will consist of options to drill, options to lease or perhaps a lease document. Land agents will be required to secure the right-of-entry documents for the project.
- Conduct a Test Hole Drilling program designed to locate and prove out

lignite reserves in the adjacent and surrounding area of the plant site. The Test Hole Drilling program also will acquire coal core samples for determination of coal quality characteristics.

- Coal quality characteristics will be used in the design of the boiler(s) and pollution equipment for the plant as well as the design of coal handling and processing facilities. Along with the coal information, the project would gain valuable knowledge on the type of overburden materials present, soils materials present, and valuable information relative to ground water.
- Preliminary determination of logical mining units for the operating mine.

The Gascoyne Mine area reserves are comprised of the Harmon Lignite bed averaging approximately thirty feet in thickness with a reserve overburden to coal ratio or stripping ratio ranging from 1.75 to 1 to a high of about 5.2 to 1. About 56 percent of the reserves have a stripping ratio of less than 4.0 to 1.

Table 1.
Typical Gascoyne Lignite Characteristics

PROXIMATE ANALYSIS	AS RECEIVED	DRY BASIS
Moisture	42%	10.5%
Ash	6.2%	10.53%
BTU	6,054	10,554
Volatile Matter	22.53%	40.55%
Fixed Carbon	22.73%	40.91%
ULTIMATE ANALYSIS		
Hydrogen		7.35%
Carbon		32.38%
Nitrogen		0.50%
Oxygen		48.16%
Sulfur		0.89%
Chlorine		0.01%
SULFUR FORMS		
Sulfate	0.04%	
Pyritic	0.22%	
Organic	0.63%	

Task IV involves a transmission study. The objective of the transmission study will be to determine a transmission plan that would be necessary to deliver the power from Gascoyne to the defined electric power markets as analyzed in Task II. The transmission study will meet the requirements of the Mid-Continent Area Power Pool's or any other applicable regional reliability council's design standards and will include steady-state and stability analysis. The North Dakota

transmission system is export constrained, therefore, any new generation facility located within the state will require transmission of such magnitude as to alleviate and mitigate the current transmission constraints.

The study for transmission facilities located in the Eastern Interconnection would be run using PSS/E load flow and stability model and would be developed based on the Mid-Continent Area Power Pool databases. If the market analysis indicates that the plant output should be marketed to the Western Interconnection, the transmission study would use the accepted Western System Coordinating Council's power flow model and databases. Depending upon the location of the market, low frequency oscillation studies may also be required. A determination of the extent of that study would have to be made after the market analysis task was completed.

A consultant will be retained to assist Montana-Dakota personnel in performing the study. Neighboring utilities, as well as the Lignite Research Council, would be invited to review the results and provide input and direction. The study will also utilize the most current published MAPP Transmission Planning Report allowing the study to incorporate new generating facilities and transmission additions which have been proposed in the region between the time of this proposal and the on-line date of the proposed power plant.

The transmission study will consider new construction of transmission lines (both alternating and direct current), upgrading of existing transmission lines, and new technologies designed to enhance the operation of the existing transmission system. There also will be an investigation of various siting constraints and regulations that may affect the transmission plan selected. The investigation will look at impediments to construction, special permits required, and any environmental issues that may need to be resolved.

Under the current rules promulgated by the Federal Energy Regulatory Commission, the cost of the transmission additions and/or enhancements associated with the Gascoyne plant outlet will be the responsibility of the plant developer. The costs associated with the transmission will be a significant factor in determining the market feasibility of the power produced at the plant. It will be necessary to determine the most cost effective transmission system to deliver the plant output to the market and still meet the Regional Reliability Council design standards.

As part of the transmission study, building transmission west of Gascoyne across the east-west interconnection boundary will be studied. It is anticipated that significant transmission construction will be required to move power to the west as three back-to-back DC ties of approximately 500 MWs capacity limit the current east-west capacity transfer capability. The price the market is willing to pay for power in the west will be a strong driver as to the practicality of building any type of transmission west. Nevertheless, it is an option that Montana-Dakota will study in order that a complete analysis of the market and transmission system will be made.

During the course of this study, in all probability, the transmission systems in the upper Midwest will become associated with a Regional Transmission Organization as established by FERC Order 2000. The establishment of RTOs will possibly change the transmission planning process, but it is anticipated that it will not negate the work being done for this plant outlet. It is anticipated that changes in reliability rules and approval processes may be the most significant. It also is possible that the transmission plan developed for this project would need to be modified to provide additional benefits to the Regional Transmission Organization and any costs associated with that modification would be noted as part of the final report. As has been determined by the FERC, investments in transmission that benefit the region are to be borne by

the regional transmission customers and would therefore not be the responsibility of the power plant. Montana-Dakota is prepared to accommodate the RTO requirements as part of this proposal. The Lignite Research Council will be apprised of any RTO requirements that will significantly alter the study.

The cost of transmission from Gascoyne to remote markets could cause the proposed project to become uneconomical. To be prudent, Montana-Dakota must determine the cost and include it as part of the market price of plant power. A decision point as to the feasibility of the project is at the conclusion of the transmission study.

Task V involves the socioeconomic analysis regarding construction of the project. Montana-Dakota Utilities will prepare a report identifying the existing socioeconomic environment and assessing the impact of a plant. Population growth resulting from coal development as an energy source and the operation of a large power plant will create increased needs for both public and private services and facilities. A broad understanding of the public and private sector costs and benefits associated with the power station can greatly aid local planning. The estimated cost of the socioeconomic study, appropriate planning study assistance for infrastructure requirements, and a feasibility study related to additional economic development, referred to below in paragraph 6.5, is \$150,000 to \$200,000.

Montana-Dakota will also seek the assistance of various public and private entities in the region to compile the data for the study. They include:

- Roosevelt-Custer Regional Council, Rod Landblom, Director – Dickinson
- Bowman County Development Corp., Cal Klewin, Director – Bowman
- Adams County Development Corp., Bob Kudrna, Director – Hettinger
- Slope County Development Group, Patty Perry, Director – Marmarth
- City Councils – Bowman, Gascoyne, Hettinger, Reeder, Scranton, and Dickinson
- County Commissions – Bowman, Adams, Slope, Hettinger, and Stark

Montana-Dakota will also rely on the assistance of other agencies to gather data for the study, such as the North Dakota Census Data Center, city and county governments, chambers of commerce, the NDSU Extension Service, and others.

Montana-Dakota will conduct public meetings in Bowman, Hettinger, and Scranton before, during and after completion of the project, to provide information to local citizens and to gather their input. Throughout the project, we intend to keep the citizens of the region informed of progress and any issues of concern or interest.

Montana-Dakota will communicate according to the following plan, which is subject to revision as necessary:

- Initial city and county information meetings to begin within one week of grant application. The meetings will be completed within 30 to 45 days
- After the awarding of the grant, informational meetings would be held with city and county governments.

- Monthly update and planning meetings with major city and county government through the end of the project.
- Establish a web-site or sub-site for updates.
- Publish a newsletter, no less frequently than every three months, for communities and counties.

In addition to the lignite mine and power plant, Montana-Dakota intends to study the feasibility of a primary sector business enterprise that can derive economic benefit from being adjacent to a power plant, such as, but not limited to, a greenhouse, meat packing plant, aqua-culture facility, and an agriculture processing facility. Conditioned upon the results of the study, Montana-Dakota will work with an enterprise to prepare a business plan, assist with efforts to seek financing, and provide energy to the facility

Task VI involves the first of two phases directed toward the generation plant design and utilization of the lignite combustion products. In this first phase, the preliminary plant design will be accomplished as well as macro analysis of a water balance, and the start of an investigation into utilization of the lignite combustion products.

Montana-Dakota is proposing that the power block be built using existing combustion technologies that have been proven through years of use. The environmental section of the power block will be “state of the art”. Further study to determine exact equipment specifications that will meet the criteria for the environmental permitting will be determined.

Montana-Dakota will assess the availability of water resources to support a 500 MW plant and adjacent manufacturing facilities.

Two major surface water sources exist in the vicinity of the planned plant site. The most readily available water resource is Gascoyne Lake. This Works Project Administration dam and lake were created in the 1930 s. Information available on Gascoyne Lake shows maximum storage capacity of nearly 1,800 acre-feet. Gascoyne Lake lies less than 1 mile from the proposed plant site. Bowman-Haley Dam, the second source, is located approximately 13 miles to the southwest of the plant site. This reservoir has a total storage capacity of 93,000 acre-feet with a normal operating range of 20,000 acre-feet. It is estimated that 3,000 acre-feet of the 20,000 acre-feet of operating range has been permitted for industrial and agricultural uses by the Bowman County Water Management Board. A third source of water, perhaps as a supplemental or emergency source, would be the Fox-Hills aquifer.

To effectively determine that water is available to support a 500 MW electric generating plant, an engineering assessment must be undertaken. It is anticipated that the plant’s annual water requirement will range between 5,000 and 6,000 acre-feet. The basic premise of the assessment is that Gascoyne Lake can be expanded, deepened and upgraded to supply all the water requirements of the plant. Along with the Gascoyne Lake study, it will also be necessary to undertake an engineering assessment on the potential for a water appropriation from Bowman-Haley Dam reservoir along with a system for moving the water from Bowman-Haley to the plant site. Transport of the water from Bowman-Haley will most likely be by pipeline. Additional water sources for use by the plant will be generated from de-watering activities during mining.

This source is expected to generate approximately 500 acre-feet per year. The water from the mine would be directed into the expanded Gascoyne Lake for use as exchange or supplemental water.

Appendix F, Exhibit B shows the location of Gascoyne Lake in relationship to the tentative plant site, the Burlington-Northern/Santa Fe Railroad, State Highway 12, and the location of the Bowman-Haley Dam.

The lignite combustion product utilization investigation will require that an initial design be completed on the power block. The physical, chemical, mineralogical, and hydration characteristics of lignite combustion produced at the proposed facility will be analyzed. This scientific approach provides information that will promote and lead to the commercialization of the lignite combustion product. A manufacturing facility will be proposed, to be located adjacent to the power block, which will utilize the ash in a productive manner.

The proposed plant site is near a rail load out loop and has easy access to east-west shipping on Interstate 94 as well as north-south shipping on state Highway 85. Marketing of material derived from lignite combustion products will be facilitated by access to these transportation routes. The Phase 1 investigation will identify possible products such as wall board, building blocks, pre-formed walls, or epoxy solidified products.

The conclusions reached in task VI will be a decision point on the feasibility to continue with the construction of this project.

Task VII involves reporting the status and progress on each of the tasks. Mr. Bruce Imsdahl, Vice President Energy Supply will serve as the principal investigator and thus will serve as the main contact with the Lignite Research Council and the North Dakota Industrial Commission. The progress on the project will be reported to all participants on a semi-annual basis. Should significant progress be identified in any task, a special interim report will be provided.

PHASE 2 of the proposal is titled **Transmission Siting, Generating Plant and Lignite Combustion Product Utilization Design**. Within this phase there are three tasks.

Task I involves transmission siting and permitting. This task will be the siting and permitting process to allow physical construction of the transmission facilities identified in the Phase 1 Transmission Planning Study. The siting and permitting will require conformance to the regulations of the states in which transmission facilities will be constructed. In North Dakota, the siting will be in accordance with the North Dakota Public Service Commission rules and regulations. It is anticipated that siting also will be required in the states of South Dakota, Minnesota, and possibly Wisconsin.

Montana-Dakota will become familiar with the individual state siting requirements. Contacts would be made with the appropriate state agencies to insure that the siting and permitting process will be in conformance with the state regulations. Throughout the entire siting and permitting process, state and local officials will be involved.

Montana-Dakota will determine a corridor(s) for the identified lines. Archaeological, environmental, and land use analyses would be performed, along with any other state

requirements. Montana-Dakota would prepare the required documents to allow for review by the appropriate state agencies and will prepare to testify in state and public siting hearings. Montana-Dakota will contact landowners and work with them in the corridor and route selection process.

Upon completion of the siting requirements, Montana-Dakota will procure the rights of way and issue contracts for construction, with the actual construction included as part of Phase 3. The success of the siting and permitting task would be a decision point as to the feasibility of the project.

Task II involves generating plant and lignite combustion product utilization design. Phase 2 task II of the ash utilization and generating plant design will be an extension of phase 1, task VI. Montana-Dakota will further refine the lignite combustion product utilization methodology, review possible manufactured goods from the lignite combustion products and suggest the design of a manufacturing facility. Montana-Dakota will further refine the design of the power block, including completion of the water availability assessment to finalize selection of cooling tower technology. Engineering documentation will be acquired necessary for all major equipment purchase as well as documentation necessary to allow submittal of a request for proposal leading to a power block construction contractor.

Task III involves reporting the status and progress on each of the tasks. As in Phase 1, Mr. Bruce Imsdahl will serve as the principal investigator, thus serving as the main contact with the Lignite Research Council and the North Dakota Industrial Commission. The progress on the project will be reported to all participants on a semi-annual basis. Should significant progress be identified in any task, a special interim report will be provided.

Phase 3 of the proposal is titled **Implementation**. Within this phase there are two tasks.

Task I involves the construction of the electric generating station, associated transmission line, and lignite mine. Montana-Dakota is proposing to construct a 500 MW, lignite fired, base loaded electric generating station at Gascoyne, North Dakota. The construction of this facility will require a transmission outlet to be constructed as identified in Phase 2. The existing inactive lignite mine at Gascoyne will be re-opened to supply fuel to the generating station. It is anticipated that the design of the power block will be a standard, proven technology, typical of current day power blocks. Lignite combustion products produced by the facility will be fully utilized in a marketable product. Montana-Dakota is not asking for NDIC matching funds for phase 3 as described.

Task II involves project management including reporting. As in Phases 1 and 2, Mr. Imsdahl as principal investigator will provide a final technical report. Progress on the project will be reported to the North Dakota Industrial Commission on an annual basis. Should significant progress be identified in any task, a special interim report will be provided. A final report will be written following the completion of the project. At the discretion of the project sponsors, the results of this project also can be disseminated to the academic community and power industry through presentations at international meetings, as well as manuscript in industry journals.

3.0 STANDARDS OF SUCCESS

The following milestones will be used to measure the success of the project. These milestones are incorporated in the Timetable for the project.

Milestone 1. Award Contracts by ND Industrial Commission by end of June 2001.

Milestone 2. Completion of Phase 1 tasks with report to the N.D. Industrial Commission, December 2003

Milestone 3. Completion of Phase 2 tasks with report to the N.D. Industrial Commission, December 2004

Milestone 4. Completion of Phase 3 tasks with report to the N. D. Industrial Commission, December 2008

Progress on the project will be reported through brief semi-annual reports for phase 1 and phase 2 projects. These reports will be submitted to the North Dakota Industrial Commission by Montana-Dakota Utilities Co. based on the reports it receives from contracted research and development organizations, contractors, and permitting agencies. Phase 3 reports will be submitted annually with a final report due upon completion.

4.0 BACKGROUND

Montana-Dakota is a generator of power for a major part of the northern Great Plains area. Montana-Dakota, serving customers with both natural gas and electricity, has a service territory that covers parts of North Dakota, Minnesota, South Dakota, Montana, and Wyoming. The service territory encompasses over six percent of the continental United States.

Montana-Dakota has over 77 years experience with electric transmission, electric power production, and generation fuel supply. North Dakota lignite mines have been operated by Montana-Dakota since the 1940s.

Montana-Dakota is a leader in generation technology. Most recently, the Coyote Station, a 400 MW electric generating station was completed under budget and within the original construction schedule. At its inception, the Coyote Station utilized state of the art pollution controls. It was the first plant in North Dakota to utilize dry scrubbing techniques for emission control.

In 1987, Montana-Dakota completed the retrofit of the R. M. Heskett Station from a stoker fired unit to fluidized bed technology. Atmospheric Fluidized Bed Combustion (AFBC) was the forerunner for the most advanced boiler design used today. AFBC offers low nitrous oxide emissions as well as increased sulfur capture, thus making it one of the cleanest combustion

systems offered in straight boiler design. The AFBC combustion system on the R. M. Heskett Station continues to break operational records for comparable boilers nation wide.

Montana-Dakota is proud of its successes in generation construction and is confident its history is an example of what it can accomplish in the future.

As a fuel supply, the Gascoyne Mine in southwestern North Dakota offers a number of unique and valuable attributes for future lignite production. The Gascoyne mine, which was originally developed by Montana-Dakota, has one of the lowest overburden to recoverable reserve ratios within the state of North Dakota. It has an available pool of experienced workers in the surrounding area. Lignite reserves are available with approximately 40 million tons under permit.

The Gascoyne Mine was successfully operated until 1995 when a contract for production expired. The long history of this mine is evidence of its success and the determination that Montana-Dakota has in returning the mine to a productive endeavor.

Montana-Dakota is proud of the fact that it has entered into a partnership with its most recent generation investments. This is proof that Montana-Dakota can work together with partners in bringing cost effective electricity to the marketplace.

A more detailed explanation of Montana-Dakota management expertise, accomplishments, and selected successes related to this project is presented in Appendix B.

5.0 QUALIFICATIONS

Montana-Dakota has assembled a team of professionals that bring together the skills necessary to successfully complete the feasibility investigation and construction project encompassing an electric generating station, associated transmission, and fuel supply from an adjacent lignite mine. Each member of the team brings their area of expertise to the tasks, yet because of the longevity and variability of their utility experience, each has insight into each other person's areas and thus can assist one another. Detailed resumes of key personnel are included in Appendix A.

Key Personnel

Mr. Wayne Fox, Montana-Dakota President, will be responsible for the overall management of the project. Mr. Bruce Imsdahl will manage the project as the Principal Investigator, lead the design and engineering efforts for the power block and be responsible for all interim reports to the North Dakota Industrial Commission. Ms. Andrea Stomberg will manage the environmental tasks associated with the permitting and construction of the power plant. Mr. Curt Blohm will manage the development efforts of the lignite mine, tightly coupled with the construction of the power block. Mr. Mike Fladeland will manage the interface with the local communities through the construction of the project. Mr. Gary Paulsen will manage the transmission aspects of the project, with the help of Mr. Hoa Nguyen, who will supervise the energy market analysis. Mr. Wayne Haidle will supervise transmission requirements. A brief description of the key personnel and their project responsibilities is provided below.

Mr. C. Wayne Fox, MBA University of Illinois, BS Electrical Engineering. – Mr. Fox has been President of Montana-Dakota Utilities Co. since 2000 and continues to be responsible for the regulatory affairs department. During his 20 years with Montana-Dakota Utilities Co., he has served as assistant treasurer-regulatory affairs, assistant vice president-regulatory affairs and vice president-regulator affairs and general services. He came to Montana-Dakota Utilities Co. in 1980 following a 16 year career with the Illinois Commerce Commission where he achieved the position of manager of the public utilities division.

Mr. Bruce Imsdahl, B.S. Mechanical Engineering - Mr. Imsdahl has been Vice President-Energy Supply in the corporate office of Montana-Dakota Utilities since 1992. Mr. Imsdahl has over 30 years experience in the electric industry. In his current position, Mr. Imsdahl is responsible for the supply and delivery of electric and natural gas energy to the 274 communities served by the utility. His previous position was Vice President-Power Supply where he was responsible for the electric generating stations of the utility, the utility's environmental efforts, and engineering of transmission, substations and distribution. Mr. Imsdahl is a registered professional engineer licensed in North Dakota and Montana.

Mr. Curt Blohm, BS Biology, MS Biology & Chemistry – Mr. Blohm is the Vice President Engineering & Environment for the coal mining division of KRC. In this position, he is responsible for management of the engineering and environmental professional staff related to the coal mining activities of KRC. His previous position was Assistant Vice President Engineering & Environment which included supervising the personnel responsible for mining permits, leases, environmental permits, and the engineering mine plan. Mr. Blohm has over 27 years experience in the mining industry, including field positions ranging from Foremen, Biologist, Reclamation Manager to his current position.

Ms. Andrea Stomberg, BS Geology, MS Soil Science, Masters in Management – Ms. Stomberg currently is Environmental Manager in the corporate office of Montana-Dakota Utilities Co. Her duties include compliance assurance for the integrated utility consisting of natural gas distribution as well as electric generation, transmission and distribution. Specific areas include air quality, water use and discharge, and solid and hazardous waste disposal. Responsibilities from previous positions include soil surveys, surface hydrology, coal combustion ash disposal permitting and reclamation issues. Ms. Stomberg has 20 years experience in the environmental area from both the utility and lignite mining industry.

Mr. Gary Paulsen, BS Electrical and Electronic Engineering – Mr. Paulsen has 30 years of experience in generation and transmission with the utility. He currently is the Director of System Operations and Planning. Duties with this position include System Control Center for energy management, procurement and installation, as well as transmission system planning and operation. Mr. Paulsen is responsible for load forecasting and wholesale market sales for Montana-Dakota Utilities Co.. He is heavily involved with the Mid-Continent Area Power Pool (MAPP) as well as the North American Electric Reliability Council (NERC). Mr. Paulsen is the Montana-Dakota Utilities Co. representative in efforts to form a Regional Transmission Organization (RTO).

Mr. Hoa Nguyen, BS Electrical Engineering, MS Electrical Engineering, M.B.A University of North Dakota, Master of Public Administration – Mr. Nguyen is responsible for Montana-Dakota Utilities Co. Integrated Resource Planning (IRP) and load forecasting activities. These activities include coordination with MAPP and NERC reliability requirements. He is a registered engineer in the state of North Dakota. As the past chairman of the MAPP Reliability Studies Subcommittee, Mr. Nguyen is intimately involved with the transmission issues related to the marketability of North Dakota generation. He is a member of the MAPP Transmission Studies Task Force and the NERC reliability committee.

Mr. Wayne Haidle, BS Electrical Engineering – Mr. Haidles current responsibilities include implementation and maintenance of the utility's Supervisory Control and Data Acquisition System (SCADA) and the Energy Management System (EMS). These systems include power flow management and contingency analysis of the utility's transmission system. He has experience in substation design, generator and transmission system protection – control design, and has done transmission load flow and dynamic stability studies. Mr. Haidle is a registered professional engineer in the state of North Dakota. He has over 25 years experience in transmission protection and bulk transmission systems analysis.

Mr. Michael Fladeland, BS Business Economics, Masters in Management – Mike Fladeland is the Community Development Coordinator for Montana-Dakota Utilities Co. for the area within North Dakota that will be most positively affected by the construction of this project. He is responsible for the utility's efforts to assist communities with retention and expansion of businesses within western North Dakota. Mr. Fladelands primary business experience and expertise is in marketing, sales, customer services and community relations. He is the Vice President of the Information Technology Council of North Dakota and is a member of the Executive Committee and Board of Directors for the North Dakota Rural Development Council.

6.0 VALUE TO NORTH DAKOTA

Montana-Dakota believes that the Vision 21 Gascoyne Project has much to offer the State of North Dakota and the lignite industry. It is specifically aimed at adding value to a relatively low-rank lignite, generating electricity, and providing power to markets in-state, as well as exporting power to out-of-state markets.

This project will help to create primary sector jobs involved in the production and utilization of North Dakota lignite. According to the Lignite Energy Council, the industry directly employs 3,000 people in North Dakota. For every direct job provided by the industry, another five-plus jobs are needed to supply the industry with goods and services. This project will employ 80 to 100 people at the mine and 60 people in the power plant, providing an estimated 840 to 960 additional jobs in the area, including the primary employment. If a more conservative estimate of two jobs, rather than five were used, the employment impact would be 420 to 480 new jobs. This project will have a major impact in southwestern North Dakota on employment, as well as the overall economy.

Using the most current technology, construction of a generating station will help to demonstrate and promote economic, efficient, and clean use of North Dakota lignite. This project will enhance coal development and, as an additional benefit, further the potential for additional research in coal technology. Montana-Dakota will maintain a good working relationship with the Lignite Research Council and the Energy and Environmental Research Council.

Montana-Dakota has identified a need for continued development of power sources in the state, in addition to wind and solar power. A thorough market study to determine the timing and extent of the state's power requirements will be conducted. Meeting those needs with a base-load, lignite-fired generating station will help to keep the state less dependent on power from other states. This means continued development and added value opportunities for lignite, an important natural resource of the state.

The lignite industry generates over \$65 million in state tax revenue. Based upon actual values from Montana-Dakota's experience with the Coyote Station, a 414 MW plant, and the adjacent coal mine, an estimated \$1 million in coal conversion taxes and \$2 million in coal severance taxes will accrue.

Lignite industry expenditures in the state are \$500 million. Each dollar spent circulates through the state's economy another two times. Thus, total business activity is more than \$1.5 billion in North Dakota. With a generation capacity of 500 MW coupled with estimated operation and maintenance costs of \$4.00 per MWhr, the economic impact is \$15.8 to \$22.1 million.

Wages and salaries are expected to be \$8,700,000 for the first year of operation. Using tax revenue factors published in a recent lignite project, we expect the following impact on taxes.

Individual:

Income Tax	\$ 97,400
Sales Tax	\$ 173,130
Property Tax	<u>\$ 287,970</u>
Total	\$ 558,500

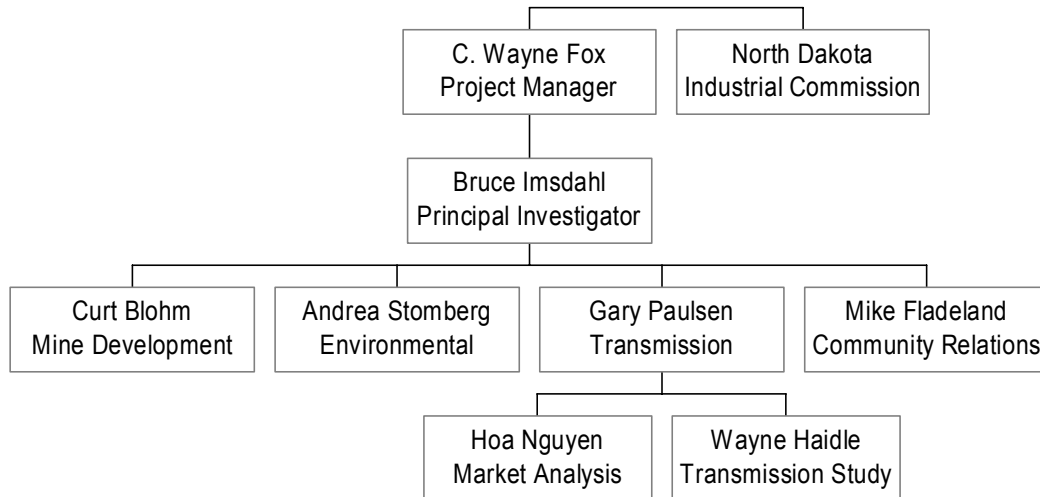
In addition to the lignite mine and power plant, Montana-Dakota intends to study the feasibility of a sector business enterprise that can derive economic benefit from being adjacent to a power plant, such as, but not limited to, a greenhouse, meatpacking plant, aqua-culture facility, and an agriculture processing facility. Conditioned upon the results of the study, Montana-Dakota will work with an enterprise to prepare a business plan, assist with efforts to seek financing, and provide energy to the facility.

7.0 PROJECT MANAGEMENT

Mr. Bruce Imsdahl of Montana-Dakota will serve as the Principal Investigator, reporting to the North Dakota Industrial Commission.

Project reporting to the North Dakota Industrial Commission will be via Mr. Bruce Imsdahl as shown in Figure 1.

Figure 1.
Project Organizational Chart



It will be the responsibility of Mr. Imsdahl to insure that each task is accomplished within each phase of the total project. Decision points on feasibility have been established for Mr. Imsdahl within each of the milestones. Critical to the project are the permitting tasks, market and transmission analysis, and mine costing study.

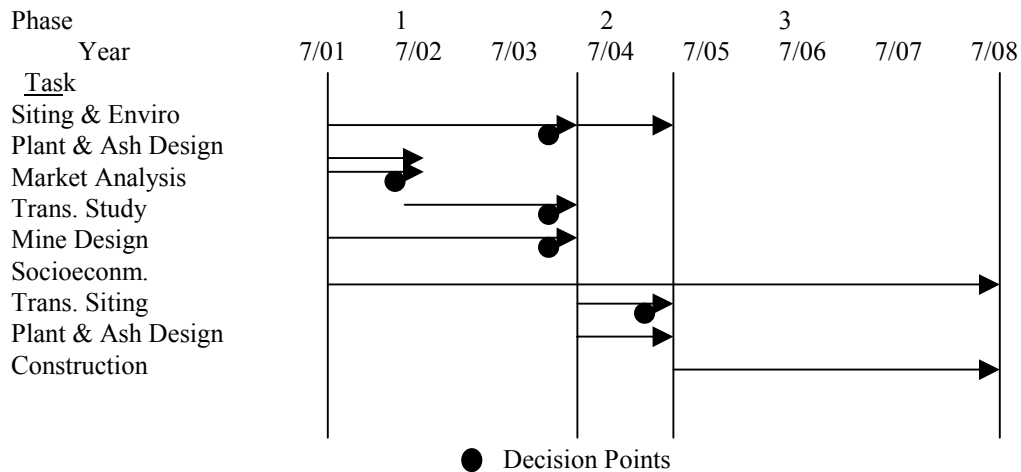
8.0 TIMETABLE

It is anticipated that the project will take approximately 8 years to complete with the following timetable.

July, 2001	Contracts Awarded (Milestone 1)
December, 2001	Interim report on Phase 1 tasks
July, 2002	Interim report on Phase 1 tasks
December, 2002	Interim report on Phase 1 tasks
July, 2003	Interim report on Phase 1 tasks
December, 2003	Final report on Phase 1 tasks (Milestone 2)
July, 2004	Interim report on Phase 2 tasks
December, 2004	Final report on Phase 2 tasks (Milestone 3)
December, 2005	Interim report on Phase 3
December, 2006	Interim report on Phase 3
December, 2007	Interim report on Phase 3
July, 2008	Draft Final report
December, 2008	Final report (Milestone 4)

A timeline of this is included in Figure 2.

Figure 2
Project Timeline



Progress on the project will be reported through brief semi-annual reports through phase 1 and phase 2. Annual reports will be submitted during phase 3. The reports will summarize the projects, accomplishments and expenditures to date. These reports will be submitted to the North Dakota Industrial Commission per the timeline as listed above or as covered under the final contract with the North Dakota Industrial Commission.

If substantial progress on a task occurs earlier than anticipated, Montana-Dakota will immediately submit a report explaining the accomplishment.

A Draft final report on the project would be delivered July 2009 with the corrected version due December 31, 2009. The draft final report will include a single page project summary describing the purpose of the project, the work accomplished, the projects results and the potential applications of the project.

9.0 BUDGET AND MATCHING FUNDS

Table 2.
Summary of Project Estimated Costs

Phase	Task	MDU (1)	NDIC	Total
1	Electric Power Market Analysis	\$400,000	\$300,000	\$700,000
	Transmission Study	\$800,000	\$700,000	\$1,500,000
	Mine Design/Cost Study	\$800,000	\$700,000	\$1,500,000
	Siting and Environmental Analysis	\$500,000	\$500,000	\$1,000,000
	Socioeconomic Impact Study	\$100,000	\$100,000	\$200,000
	Phase 1 Plant/Ash Utilization Design	\$800,000	\$700,000	\$1,500,000
	Subtotal	\$3,400,000	\$3,000,000	\$6,400,000
2	Transmission Permit/Siting	\$4,000,000	\$4,000,000	\$8,000,000
	Phase 2 Plant/Ash Utilization Design	\$3,000,000	\$3,000,000	\$6,000,000
	Subtotal	\$7,000,000	\$7,000,000	\$14,000,000
3	Construction of Generating Station, Transmission Line, and Lignite Mine	\$740,000,000	0	\$740,000,000
	Subtotal	\$740,000,000	0	\$740,000,000

(1) Includes Fringe Benefits, Labor Overhead Costs and G&A Overhead.

Phase 1 matching funds from the North Dakota Industrial Commission are critical to the success of this project. Montana-Dakota has proposed that its share of phase 1 be \$3,400,000 with the North Dakota Industrial Commissions share being \$3,000,000. This initial grant funding would be used to insure the first phase of feasibility could be completed.

Phase 2 matching funds are as critical as phase 1. The North Dakota transmission system must be thoroughly studied to determine the feasibility of any electric generating station to be built within the state. Phase 2 will include a North Dakota transmission system analysis.

10.0 TAX LIABILITY STATEMENT

Montana-Dakota has included an affidavit that specifies it does not have any outstanding tax liability with the State of North Dakota. The affidavit is provided in Appendix D.

11.0 CONFIDENTIAL INFORMATION

None of the information in this proposal is considered confidential.

12.0 RELATED REFERENCES

- Coon, Randal C. and Leistritz, Larry F. North Dakota Lignite Energy Industry's Contribution to the State Economy for 1999 and Projected 2000. AE2001. Fargo: North Dakota State University, Dept. of Agr. Econ.
- Croft, M. G., 1978, "Ground Water Resources of Adams and Bowman Counties, North Dakota" U. S. Geological Survey, Bulletin 65 Part III.
- Fahy, Vern 1975, "The West River Study", North Dakota State Water Commission, SWC Project No. 1543
- Dakota Gasification Cooperative, DGC Carbon Dioxide Project, Revenue Benefits to North Dakota.

APPENDIX A

RESUMES OF KEY PERSONNEL

MR. C. WAYNE FOX
President
Montana-Dakota Utilities Co. and Great Plains Natural Gas Co.

Education

Bachelor of Science in Electrical Engineering, Chicago Technical College

Master of Business Administration, University of Illinois

Stone & Webster Management Development Course

Experience

- Since joining the company in June 1980, I have served as Assistant Treasurer – Regulatory Affairs; elected Assistant Vice President in May, 1982; Vice President – Regulatory Affairs in 1985; assumed the responsibility of Administering the General Services and Purchasing Depts. in May 1987 and title changed to Vice-President, Regulatory Affairs and General Services. Promoted to President of Montana-Dakota Utilities Co. and Great Plains Natural Gas Co. on August 17, 2000, to present.

- Spent sixteen years with the Illinois Commerce Commission in various capacities. Upon termination of employment in June, 1980, I was acting in the capacity of Manager of the Public Utilities Division, reporting to the Chairman of the Commission.

Wayne served in the past on various EPRI committees. Currently a member of the EEI Economic, Regulatory and Competition Committee, and past Chairman of the EEI Rate School Subcommittee.

MR. BRUCE T. IMSDAHL, P.E.
Vice President Energy Supply
Montana-Dakota Utilities Co.

Education

B. S. Mechanical Engineering,
North Dakota State University

Graduate of the University of Pittsburgh's Management Program for Executives

Registered Professional Engineer in State of North Dakota and Montana

Experience

- Vice President Energy Supply, Montana Dakota Utilities Co since 1992. Responsible for the supply and delivery of electric and natural gas energy to the 274 communities served by Montana-Dakota and Great Plains Natural Gas. The responsibilities of the position are to oversee Montana Dakota Utilities' power production, transmission, substations, and communications, environmental and gas supply departments.
- Vice President – Power Supply, Montana-Dakota Utilities Co. 1989 to 1992. Responsible for the companies power production, environmental and engineering of transmission, substations and distribution.
- Generation Manager – Power Production, Montana-Dakota Utilities Co. 1985 to 1989. In this position, he was responsible for supervision of Montana-Dakota's power plants.
- Station Manager R. M. Heskett Station, Montana-Dakota Utilities Co. 1983 to 1985. The R. M. Heskett Station is a two unit lignite-fired plant consisting of a 20 MW unit and a 66 MW unit.
- Station Superintendent – Lewis & Clark Station, Montana-Dakota Utilities Co. 1979 to 1983. The Lewis & Clark Station is a 50 MW lignite fired plant located near Sidney, Montana.
- 1970 to 1979 Results Engineering and Production Engineering positions with Montana-Dakota Utilities Co. 1970 to 1979.

Bruce Imsdahl is a professional engineer in the States of North Dakota and Montana and has over 30 years experience in the electric industry, including production experience in combustion of lignite coal in PC, Cyclone, stoker and fluidized bed boilers. He is Montana-Dakota Utilities Co.'s representative on the MAPP Management Committee.

MR. CURTIS L. BLOHM
Vice President – Engineering & Environment
Knife River Corporation

Education

Bachelor of Sciences – Biology emphasis
Minot State University
Minot, North Dakota

Master of Natural Sciences – Biology & Chemistry emphasis
Geology – minor, University of South Dakota

Experience

- In 1988. Mr. Blohm was promoted to Vice President, Engineering & Environment and currently serves in this capacity in the coal mining division of Knife River Corporation – duties include management of the engineering and environmental professional staff related to surface coal mining activities of Knife River Corporation; responsible for landowner relations, leasing, special lease payments, securing federal and fee coal leases, securing royalty rate changes on federal coal leases, permitting management, management of closure activities of the Gascoyne mine, interaction with township, county, state and federal regulatory agencies and long range planning related to permitting activities. Additional duties relate to assessment and/or analysis of long range mine planning, coal quality assessment and analysis, costing analysis for various mining and reclamation functions and interaction with customers relative to coal quality issues.
- In 1987. Mr. Blohm was promoted to Assistant Vice President. Engineering & Environment – duties included management of personnel in the Engineering & Environmental Department, assignment of projects, prioritization projects, technical review of permit information, technical writing for permits, landowner relations, leasing and environmental studies management for future permit areas. Committee chair during the development of the Lignite Research, Development, & Marketing Program for the North Dakota Lignite Council and Industrial Commission.
- In 1977. Mr. Blohm was promoted to Reclamation Manager - management of environmental and professional staff in the corporate headquarters and active mine sites related to environmental studies, monitoring, assessments, permits, test hole drilling, compilation of federal, state and local permits for surface mining operations in North Dakota and Montana.
- In 1974. Mr. Blohm was transferred to the corporate offices of Knife River and promoted to the title of Biologist – conducted field work in the environmental areas of wildlife, geology, surface water, groundwater, soils and vegetation. Directed contractors related to cultural resources surveys and assessments. Assisted active mining operations in Montana and North Dakota relative to newly implemented regulatory programs on the federal and state levels.
- In 1974. Mr. Blohm began his career with Knife River at the Beulah Mine as an Assistant Foreman. Duties and responsibilities included directing manpower and machinery in day to

day operational duties, coal loading foreman duties, equipment foreman for scrapers and dozers operating in reclamation and mining conditions.

Mr. Blohm has been involved in various clean coal technology projects related to benefaction of lignite, development of products from lignite and enhancement of lignite for uses in power plants, boilers and industrial boiler operations. He has served on various committees related to clean coal technologies, environmental technology, reclamation technology and lignite coal quality issues.

ANDREA L. STOMBERG
Environmental Manager
Montana-Dakota Utilities Co.

Education

BS Geology, University of Washington, Seattle, WA, 1971

MS Soil Science, Oregon State University, Corvallis, OR, 1980

Masters Management, University of Mary, Bismarck, ND, 1990

Experience

- Project Environmental Manager- Montana-Dakota Utilities Co. 1993 to present. Permitting and compliance assurance for combination utility with power generation, transmission and distribution, including air quality, water use and discharge, solid and hazardous waste disposal, hazardous material management, site remediation, due diligence for acquisitions.
- Environmental Scientist- Montana-Dakota Utilities Co. 1990-1993. Management of PCB and hazardous wastes, development of compliance plans, compliance audits for operating divisions and power generation facilities.
- Environmental Specialist- Falkirk Mining Co. 1980-1990. Responsibilities included soil survey and surface hydrology for mine permitting, coal combustion ash disposal permitting and monitoring, reclamation planning and compliance assurance.

Other activities:

Chair, Midwest Energy Environmental Committee

Chair, North Dakota Air Pollution Advisory Council

Member, Edison Electric Institute Environmental Committee

MR. GARY L. PAULSEN, P.E.
Director of System Operations and Planning
Montana-Dakota Utilities Co.

Education

Bachelor of Science in Electrical and Electronic Engineering
North Dakota State University

Professional

Senior Member Institute of Electrical and Electronics Engineers (IEEE)
Registered Professional Engineer in North Dakota

Experience

- Project Manager for MDU's Integrated Resource Planning process. (Often, this process is referred to as Least Cost Planning, and involves the integration of customer demand-side management programs with traditional and non-traditional supply side programs.)
- Project Manager for Montana-Dakota Utilities Co. Sheridan, WY power supply project.
- Project Manager for Montana-Dakota Utilities Co. System Control Center Energy Management System procurement and installation.
- Served on the NERC Reliability/Market Interface Strategic Planning search conference whose purpose was to determine the direction of the electric utility industry.
- Presently responsible for the supervision of transmission system planning and operation, load forecasting, and wholesale power marketing for Montana-Dakota Utilities Co.

Gary has thirty years of experience in the generation and transmission of electricity. His entire career has been spent performing transmission studies, generation studies, overseeing operation of transmission systems and system control centers. He has vast experience with the evolution of the utility industry through his involvement with the Mid-Continent Area Power Pool, North American Electric Reliability Council and the Edison Electric Institute. He is presently involved with Montana-Dakota Utilities Co.'s efforts to form or be a member in a Regional Transmission Organization.

Hoa V. Nguyen
Power Supply Coordinator
Montana-Dakota Utilities Co.

Education

B.S. Electrical Engineering, National Institute of Technology, Saigon, Vietnam, 1970

M.S. Electrical Engineering, University of Saigon, Saigon, Vietnam, 1975

Master of Business Administration, University of North Dakota, 1995

Master of Public Administration, University of North Dakota, 1998

Experience

- Power Systems Coordinator- Montana-Dakota Utilities Co. 1997 to present. Responsible for technical aspects of the integrated resource planning and load forecasting activities. Coordinate activities on issues concerning power supply, reliability, and power purchase and sale contracts. MAPP and NERC reliability committee participant.
- System Operations Senior Staff Engineer- Montana-Dakota Utilities Co. 1984 - 1996. Assignments involved a wide range of utility planning and operations studies and related functions.
- System Operations Staff Engineer- Montana-Dakota Utilities Co. 1976 – 1984.
- Assistant Professor, Electrical Engineering and Director of Faculty Affairs, Thu Duc Polytechnical University, Saigon, Vietnam, 1973 – 1975.
- Assistant Professor, Electrical Engineering and Director of the Electric Machines Laboratory, Minh Duc, Saigon, Vietnam, 1972 – 1973.

MAPP and NERC Experience

Member of the MAPP Transmission Studies Task Force

Consultant to the MAPP Generation Studies Task Force

Member of the MAPP Reliability Studies Subcommittee (RSS), Chairman 2000

Member of the NERC Reliability Assessment Subcommittee

Professional License and Affiliations

Registered Professional Engineer in North Dakota

Senior Member, Institute of Electrical and Electronics Engineers (IEEE)

Vice Chairman and Past Chairman of the local IEEE Power Engineering Society

MR. WAYNE M. HAIDLE, P.E.
Power Transmission System Coordinator
Montana-Dakota Utilities Co.

Education

B. S. Electrical Engineering
 Montana State University

Registered Professional Engineer in State of North Dakota

Experience

- Substation design and construction supervision
- Transmission protection control design layout and construction supervision
- Transmission and generation protection studies and implementation
- Transmission load flow and dynamic stability studies
- Member of Northern MAPP Operating Reliability Working Group (NMORWG) and predecessor groups for many years
- A principal contributor and developer of the first widely accepted uniform user interface package for MAPP load flow and dynamic simulation studies
- Responsible for implementation and maintenance of advanced applications on SCADA/EMS system including but not limited to dispatcher power flow, state estimation, and contingency analysis

Wayne Haidle is a professional engineer in the State of North Dakota and has over 25 years of experience in electric transmission protection, power flow studies, and dynamic stability studies of bulk transmission systems.

Michael L. Fladeland
Community Development Coordinator
Montana-Dakota Utilities Co.

Education

BS, Business Economics, North Dakota State University
Masters in Management, University of Mary
Economic Development Finance Professional, National Development Council
Graduate, Economic Development Institute, American Economic Development Council

Experience

- Community Development Coordinator – Fladeland is responsible for promoting the company as a partner in communities' efforts to improve the standard of living as well as the quality of life. He assists communities with the retention and expansion of businesses, together with related employment and desirable energy loads. He works to enhance Montana-Dakota's presence in the community, by stressing good corporate citizenship through funding and technical assistance. Further, Fladeland works with employees to foster a positive relationship with them and the communities
- In 1996, Fladeland was appointed the Sales Promotion Manager for Montana-Dakota Utilities Co. He was responsible for marketing electric and natural gas services to residential and small commercial customers throughout the four state service territory of Montana, North Dakota, South Dakota, and Wyoming. Supervisory responsibilities included 4 sales promotion representatives located in each of the four states.
- In 1987, Fladeland accepted the position of Economic Development Representative in the Public Affairs Department, MDU Resources Group, Inc. He administered and coordinated the company's economic development activities for the corporation.
- In 1984, Fladeland was hired as Marketing Sales Coordinator for Montana-Dakota Utilities Co. He administered the appliance sales program, including pricing, coordinating promotions, and provided planning and assistance to the salespeople

Professional Organizations and Affiliations

- Vice-President, Information Technology Council of North Dakota
- Secretary and Immediate Past Chair, Upper Missouri Information Technology Council
- Executive Committee and Board of Directors, North Dakota Rural Development Council
- Past President, Industrial Development Association of North Dakota
- Board of Directors, Mid-America Economic Development Council
- Instructor, Marketing Management, Master's level course, University of Mary

Fladeland's primary business experience and expertise is in marketing, sales, customer service, and community relations. He has developed and managed various programs, including trade show participation, product introduction of appliance warranty programs and security systems, community and economic development strategic planning workshops, and a community loan pool program. On economic and community development programs he has worked directly with a number of state Governors, state and local economic development officials, state and federal offices, including the Small Business Administration, Rural Utilities Service, and the North Dakota Department of Community Service, and owners and managers of many private businesses and organizations.

APPENDIX B

MANAGEMENT EXPERIENCE

MDU RESOURCES GROUP, INC.

MDU Resources Group, Inc. provides energy, value-added natural resources products, and related services that are essential to our country's energy, transportation and communication infrastructure. MDU Resources includes an electric and natural gas utility, a natural gas pipeline, utility services, oil and natural gas production, construction materials and mining, and energy services. MDU Resources corporate offices are located at:

MDU Resources Group, Inc.
Schuchart Building
918 East Divide Avenue
Bismarck, North Dakota.

Montana-Dakota Utilities Co., a division of MDU Resources Group, Inc. provides natural gas distribution and is a vertically integrated electric utility that serves portions of four Northern Great Plains states with reliable, competitively priced energy. North Dakota is one of the five states served, with both natural gas and electricity. Montana-Dakota Utilities Co. corporate offices are located at:

Montana-Dakota Utilities Co.
400 N. 4th St.
Bismarck, North Dakota.

Knife River Corporation, a subsidiary of MDU Resources Group, Inc., is a fully integrated construction materials and mining company actively engaged in reserve acquisition, development, production and marketing of aggregates and related value-added construction materials in Alaska, California, Hawaii, Montana, Oregon and Wyoming, and lignite coal mining in Montana and North Dakota. The company is committed to providing customers with high quality, cost effective products in an environmentally safe manner. Knife River Corporation corporate offices are located at:

Knife River Corporation
1915 North Kavaney Drive
Bismarck, North Dakota

MONTANA-DAKOTA UTILITIES CO.

Background

The growth and expertise of the utility goes back some 77 years. Montana-Dakota was first organized in 1924 as an investor owned utility. The stock symbol for the current group has appeared on the New York Stock exchange for over 50 years.

Montana-Dakota first did business in North Dakota in 1924 when it built a transmission line from Wibaux, Montana to Beach, North Dakota. The utility then started major growth into much of western North Dakota which included electric transmission lines, natural gas and lignite fired electric generating stations.

As transmission lines were built to connect the cities in western and central North Dakota, and more city owned electric companies were acquired by Montana-Dakota, the company was able to retire less efficient type generating stations and build more efficient central generating stations. Montana-Dakota acquired a lignite mine located at Beulah, North Dakota with its electric service acquisition of electric properties in central North Dakota. The lignite mine would become the birthplace of the Knife River Corporation.

Knife River Corporation produced its first ton of coal in 1917. The Company operated three lignite mining operations in two states up until 1995: one near Beulah, North Dakota which remains an active mining operation and another near the village of Gascoyne in southwestern North Dakota. A third active mining operation exists near Savage, Montana. The company is headquartered in Bismarck, North Dakota. The coal division of Knife River Corporation supplies coal to two electrical power generating stations in North Dakota: the Coyote I Station near its Beulah mine and Heskett Stations I and II located near Mandan, North Dakota. The Savage mine supplies fuel requirements for the Lewis & Clark Station and Imperial Holly Sugar's sugar beet processing plant both of which are located in Sidney, Montana.

Knife River's Gascoyne Mine became inactive in August, 1995 with the expiration of its twenty-(20) year contract to supply fuel to the Big Stone Station located near Big Stone City, South Dakota.

While building electric generating stations throughout its history, Montana-Dakota achieved a number of "firsts" within the state of North Dakota. In 1953, MDU installed two gas turbine generators at Williston, North Dakota. These two turbines were the first gas turbines to be installed in the state. In fact, there were only ten other operating gas turbines in the entire nation at that time. In 1954, Montana-Dakota built the first unit of the R. M. Heskett Station, located at Mandan, North Dakota. The first unit was rated at 25 MW, burning lignite for fuel. At the conclusion of construction, the R. M. Heskett Station was the largest electric generating station in North Dakota and South Dakota. In 1963 when the second unit, rated at 66 MW, was added to burn additional lignite it was the largest spreader stoker boiler in the world. In 1981, Montana-Dakota partnered with 4 other electric utilities in constructing the Coyote Station at Beulah, North Dakota. Coyote Station, rated at 410 MW, was the first electric generating station in North Dakota to utilize a dry scrubber for compliance with air quality regulations. The unit was the first electric generating station in North Dakota to utilize fiber optic cable for communications.

Currently, Montana-Dakota serves an area covering approximately six percent of the continental United States. The utility has over 115,000 electric customers, serves electricity to 176 communities, with over 2,800 miles of overhead and 1,000 miles of underground distribution lines and over 3,100 miles of high voltage transmission.

The growth of the utility and the commitment to our customers exhibited by Montana-Dakota's history continues today

Management Experience

Montana-Dakota personnel, for three quarters of a century, have been building transmission lines as well as electric generating stations. As new electric generating stations were built, state of the art technology was used. Creative use of new technologies in the building of the generating stations has been a cornerstone of the utility, propagated by the intense interest of the utility employees. Montana-Dakota has never been shy about evaluating new technologies, correcting faults within the technology, and then using the new technology. Several projects should be noted that represent the breadth of the Montana-Dakota experience.

The supervision for start-up, operation, and mine expansion of the Coyote Station was directly a Montana-Dakota accomplishment. This 400 MW, mine mouth plant became commercial in 1981. Montana-Dakota provided the balance of the manpower needed for supervision of the final construction and startup of this plant. While plant construction was occurring, the Knife River mine was being expanded from its previous 500,000 ton per year production, to a new 2.5 million ton per year production. Montana-Dakota provided all manpower needed for the initial operation of the Coyote Station and successfully operated the Coyote Station until 1998 when the operation was turned over to a partner of the facility.

The R. M. Heskett Station, a 80 MW wholly owned generating station located at Mandan, North Dakota, successfully utilizes lignite in an Atmospheric Fluid Bed Combustion (AFBC) boiler. This unit, converted to AFBC technology in 1987, was one of the first AFBC units in the United States. While other AFBC units have since elected to reduce operation of their units, the R. M. Heskett Station boiler continues to operate with an availability greater than the national average for all types of boilers.

Montana-Dakota has the support resources required to accomplish the objectives of this project. Qualified staff required to provide project management, design review, engineering, and permitting is available within our organization.

Knife River Corporation has the expertise to manage and guide the development of a new mine and mining area at the Gascoyne reserves to support a new electrical generating station. Knife River will utilize its personnel to assist with the necessary local permitting and zoning requirements for the project from its inception to completion. Knife River's personnel are very qualified to assist in this Vision 21 project to benefit the people of southwest North Dakota, the lignite and electric utility industry and to promote economic development in North Dakota.

APPENDIX C
BUDGET DETAILS

COST ESTIMATE

Amount Requested from Funding Sources

Montana-Dakota proposes to perform the work described in the technical proposal for a total project cost of \$20,400,000 including \$10,400,000 from Montana-Dakota and \$10,000,000 from the North Dakota Industrial Commission. Detailed cost estimates and cash flow for the NDIC and Montana-Dakota for the total project are shown in Attachment A.

Estimating Procedures

The selection of the proposed Montana-Dakota personnel and the estimated Montana-Dakota direct labor cost are based on the professional judgment of Montana-Dakota project and task managers. Labor costs are based on actual labor rates of individuals qualified to perform the work. Estimates for other costs are based on the professional judgment of project and task managers.

Indirect Rates

Montana-Dakota rates for year 2001 were used to prepare this cost estimate. The estimate does include labor which has been loaded with fringe benefits, labor overhead and G&A overhead.

ATTACHMENT A

ANNUAL BUDGET – CASH FLOW

Table 3
Annual Budget – Cash Flow

Phase	Year	Category	MDU (1)	NDIC	Total
1	1	In Kind Labor	\$200,000		\$200,000
		Contract	\$1,400,000	\$1,500,000	\$2,900,000
		Subtotal	\$1,600,000	\$1,500,000	\$3,100,000
	2	In Kind Labor	\$200,000		\$200,000
		Contract	\$900,000	\$1,000,000	\$1,900,000
		Subtotal	\$1,100,000	\$1,000,000	\$2,100,000
	3	In Kind Labor	\$200,000		\$200,000
		Contract	\$500,000	\$500,000	\$1,000,000
		Subtotal	\$700,000	\$500,000	\$1,200,000
	Phase 1 Total		\$3,400,000	\$3,000,000	\$6,400,000
2	1	In Kind Labor	\$200,000	\$200,000	\$400,000
		Contract	\$3,300,000	\$3,300,000	\$6,600,000
		Subtotal	\$3,500,000	\$3,500,000	\$7,000,000
	2	In Kind Labor	\$200,000	\$200,000	\$400,000
		Contract	\$3,300,000	\$3,300,000	\$6,600,000
		Subtotal	\$3,500,000	\$3,500,000	\$7,000,000
	Phase 2 Total		\$7,000,000	\$7,000,000	\$14,000,000

(1) Loaded with fringe benefits, labor overhead and G&A over head

APPENDIX D

TAX LIABILITY AFFIDAVIT



February 26, 2001

Ms. Karlene Fine
Executive Director
North Dakota Industrial Commission
600 East Boulevard Avenue
Bismarck, ND 58505

Dear Ms. Fine

This letter certifies that, to the best of my knowledge, Montana-Dakota Utilities Co. does not have any outstanding tax liabilities with the State of North Dakota nor any of its political subdivisions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Bruce Imsdahl', is written in a cursive style.

Bruce Imsdahl
Vice President, Energy Supply

APPENDIX E

LETTERS OF COMMITMENT



February 26, 2001

Ms. Karlene Fine
Executive Director
North Dakota Industrial Commission
600 East Boulevard Avenue
Bismarck, ND 58505

Dear Ms Fine:

This letter is to confirm the intention of Montana-Dakota Utilities Co. to co-fund the project entitled LIGNITE VISION 21 PROJECT, GASCOYNE, NORTH DAKOTA. The level of this co-funding commitment is \$3,400,000 for phase 1 and \$7,000,000 for phase 2 as detailed in the Budget and Matching Funds sections of our application dated February 26, 2001.

This funding commitment is contingent upon approval of the project by the Lignite Research Council and the North Dakota Industrial Commission.

We look forward to working with you on this important development project for the State of North Dakota.

Sincerely,

A handwritten signature in black ink, appearing to read 'C. Wayne Fox', written in a cursive style.

C. Wayne Fox
President

ROOSEVELT-CUSTER REGIONAL COUNCIL FOR DEVELOPMENT

Pulver Hall
Dickinson, ND 58601-4857

Phone: (701) 483-1241
Fax: (701) 483-1243
E-Mail: info@rooseveltcuster.com

February 16, 2001

Bruce Imsdahl
VP for Energy Supply
Montana-Dakota Utilities Co.
400 N. Fourth St.
Bismarck, ND 58501

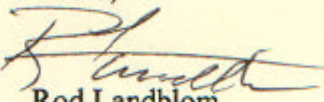
Mr. Imsdahl:

It has come to my attention that Montana-Dakota Utilities Company is investigating the feasibility of developing a lignite coal mine and electric generating station near Gascoyne, North Dakota, as part of the Vision 21 project. While I am unable to formally speak for the Board of Directors of the Roosevelt-Custer Regional Council at this time, I would personally encourage MDU to pursue the proposed study of such a venture.

In my 25 years as director of the Roosevelt-Custer Regional Council, I have seen the value to our region and local economy that the Knife River Coal Mine had when it was in operation. Similarly, I witnessed the resulting effect that took place when the mine closed. I personally believe that an effort to responsibly utilize those natural and human resources of our area would be a direct benefit not only to southwestern North Dakota but to the State of North Dakota.

Hopefully, a study of your proposed project will provide the credence and impetus to pursue this development. Best wishes on your endeavor.

Yours,

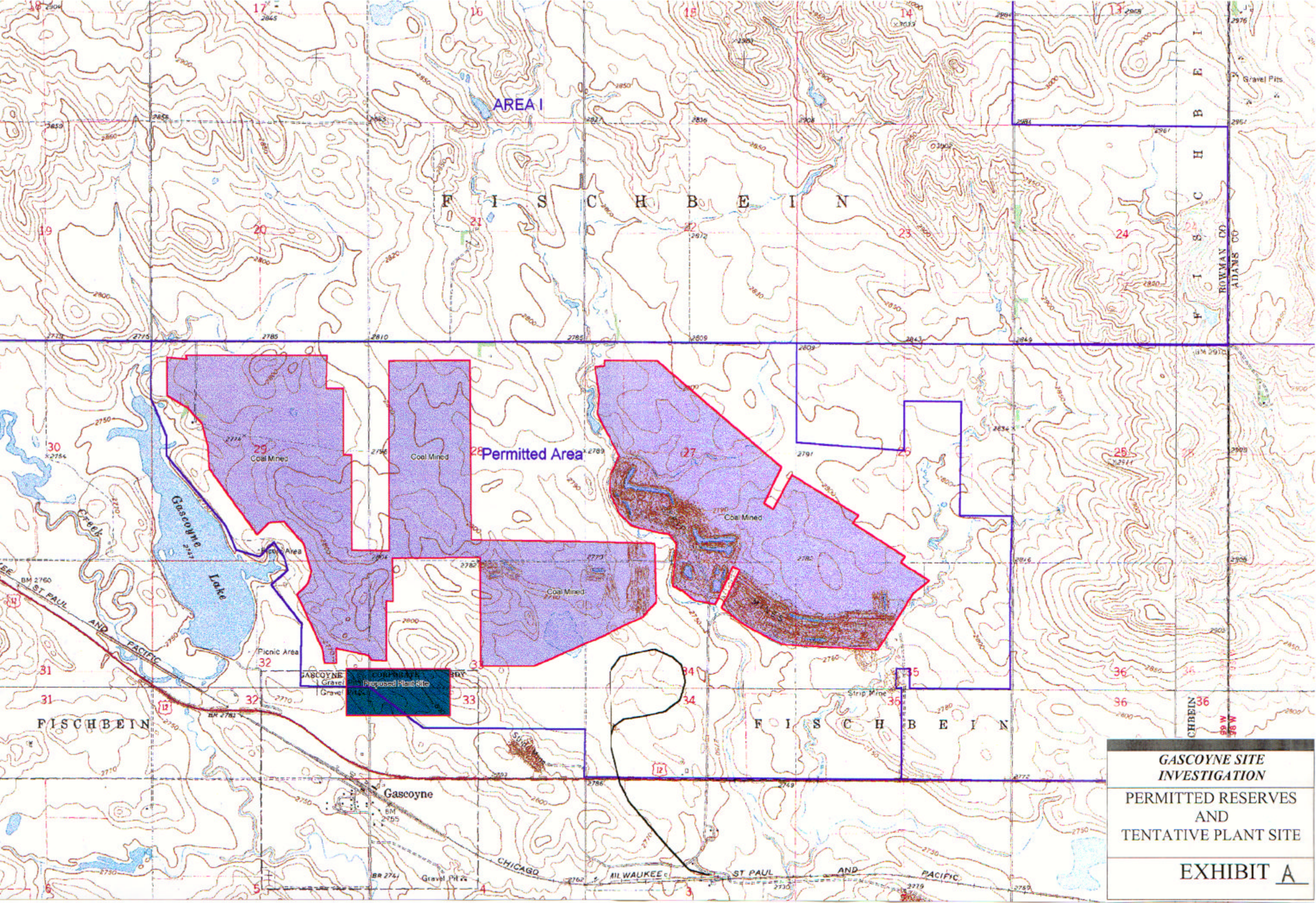


Rod Landblom
Executive Director

RL/cs

APPENDIX F

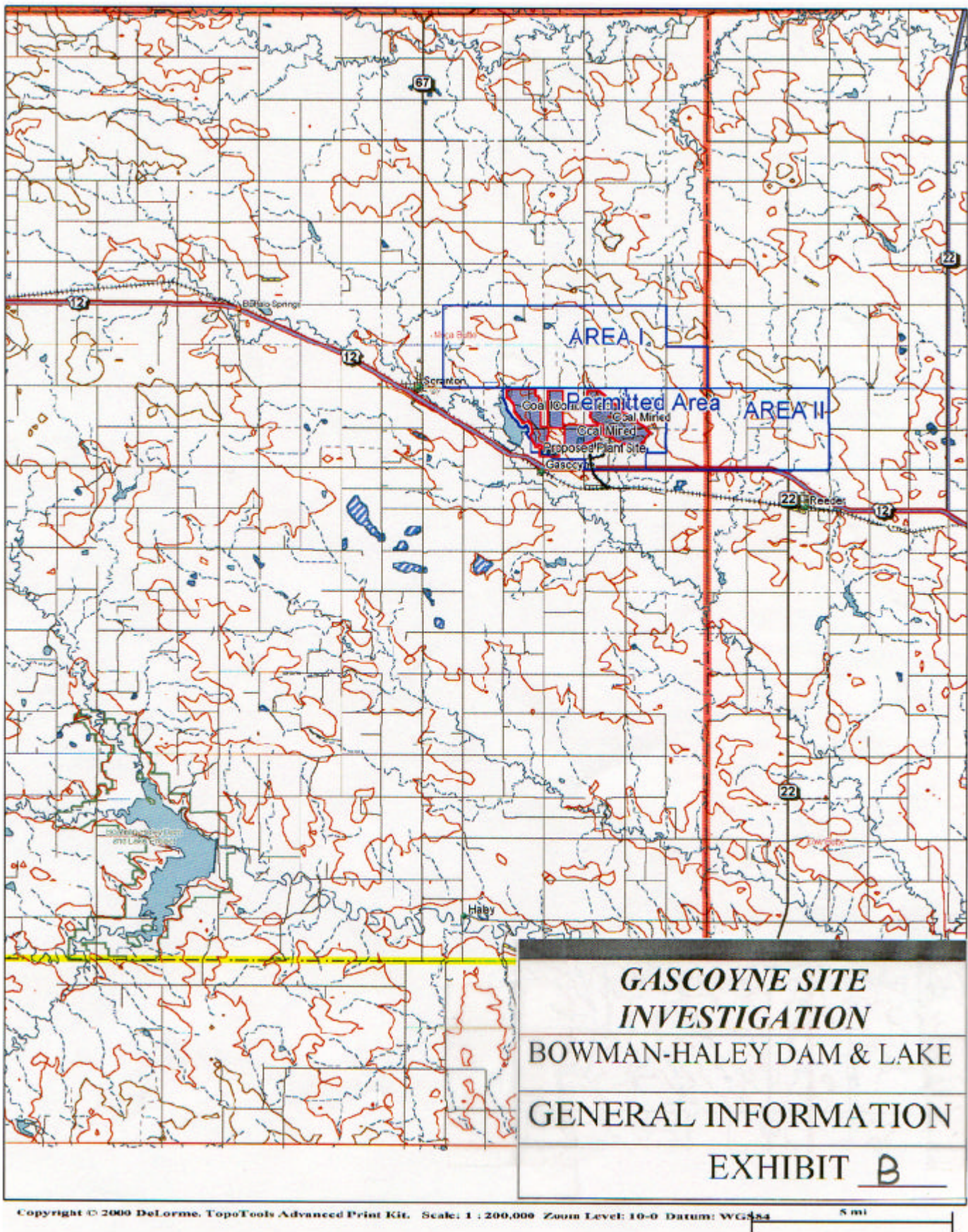
MAPS OF THE GASCOYNE AREA



**GASCOYNE SITE
INVESTIGATION**

**PERMITTED RESERVES
AND
TENTATIVE PLANT SITE**

EXHIBIT A



***GASCOYNE SITE
INVESTIGATION***
BOWMAN-HALEY DAM & LAKE
GENERAL INFORMATION
EXHIBIT B